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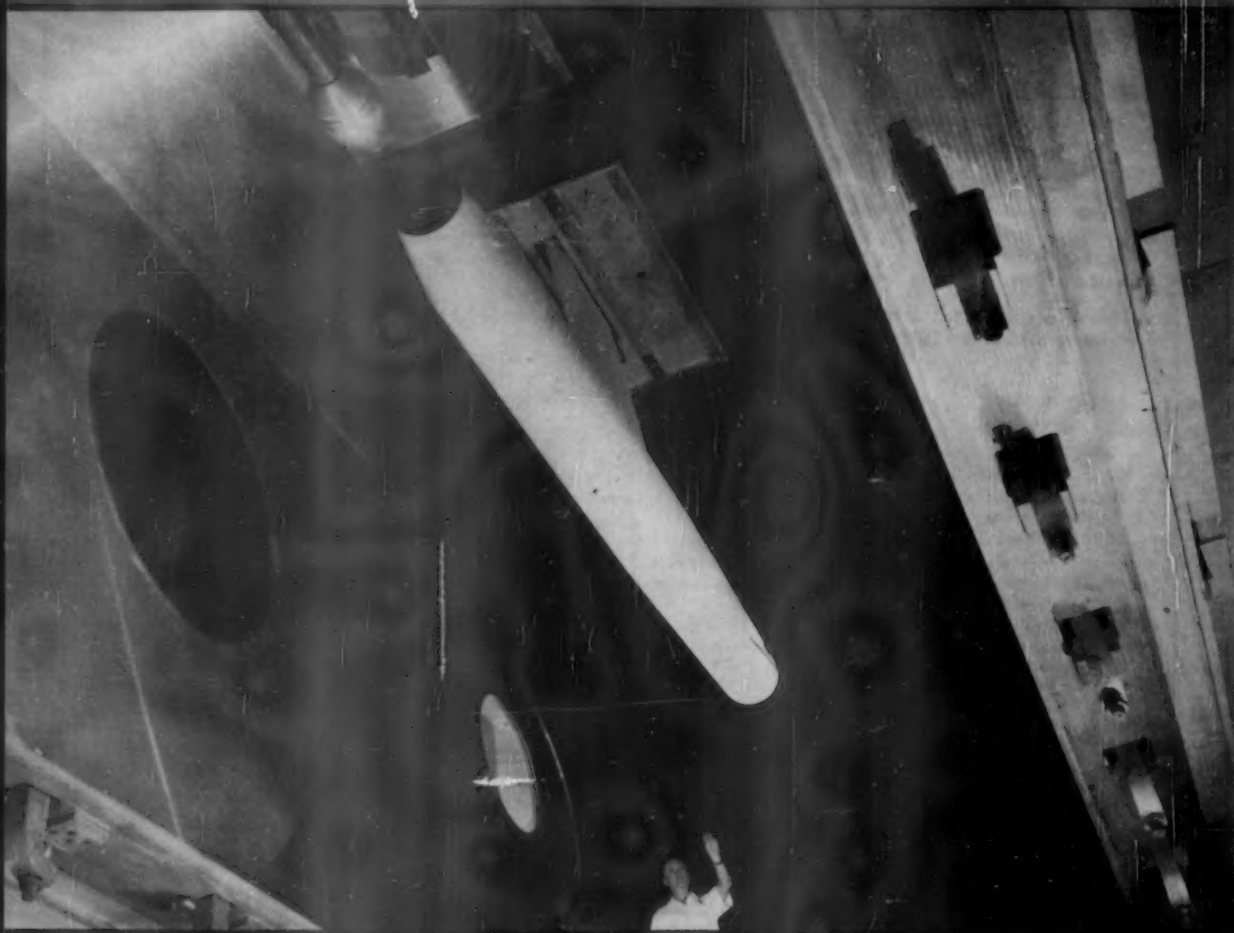
June 2, 1956

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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



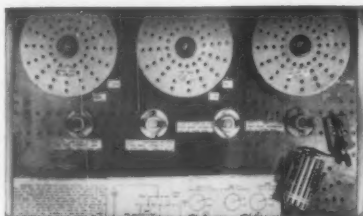
Ramjet Test

See Page 339

A SCIENCE SERVICE PUBLICATION

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AERONAUTICS

New U. S. Wind Tunnel

National Advisory Committee for Aeronautics now operating the world's most advanced wind tunnel for testing tomorrow's aircraft. It took five years to build.

See Front Cover

► ANY KIND of airplane or missile of the future can be given a test flight in the world's most advanced wind tunnel that has now started to roar at the National Advisory Committee for Aeronautics Lewis Flight Propulsion Laboratory, Cleveland.

It is a \$33,000,000 research plant that can test engine, rocket, airplanes and other flying structures at up to 2,400 miles per hour, and under conditions equivalent to as much as 100,000 feet altitude.

It can test full scale jet engines in full operation. Its test area is ten feet square. It is probably better and bigger than the Russians have. No one seems to know or at least no one will say. It cannot be assumed that the Soviet aeronautical research is necessarily lagging, but our Government's aeronautical research agency has certainly built more wind tunnels than any one else.

Missiles and airplanes that will start flying five years from now are now being developed fundamentally in the new wind tunnel.

It took five years actually to build the great testing device and Government plans were first made as much as 12 years ago. The research development will have an important bearing on keeping America supreme in the air and in guided missiles in the years to come.

Lewis Laboratory staff engineers made more than 100 design studies before selecting the configuration of the Lewis unitary plan wind tunnel. They built and tested a small scale model of the selected proposal before making final plans.

Design studies began in 1950, construction of equipment was started in early 1952, and ground was broken for the buildings July 31, 1952. The project was completed and the tunnel put into operation in May, 1956. NACA engineers supervised the construction job, which was carried out by more than 450 contractors, engineering firms and suppliers.

Shown on the cover of this week's SCIENCE NEWS LETTER is an aft view of a 16-inch ramjet in test position, seen through a floor opening of the Lewis unitary plan wind tunnel. The body of revolution downstream of the ramjet nozzle is a movable plug, used to simulate the changes in internal flow that would take place during engine combustion.

The continuous-flow wind tunnel has a Mach number range from 2.0 to 3.5, and is operational either in closed circuit for aerodynamic tests or an open end cycle for combustion propulsion research.

In operation, the tunnel draws air through the dryer and the flexible wall nozzle into the test section, where the engine or airplane model is mounted.

For speeds above Mach 2.5, the two compressors are operated together. For lower speeds, the secondary compressor is shut down and the air flow is valved around it through a bypass circuit.

The altitude simulated in the test section where the model is located is regulated by means of exhausters located near the flexible nozzle. Air temperature is controlled by a water cooling tower separated from the main tunnel structure.

Elaborate systems for safety and for remote control of all elements of this huge research tool are included, and soundproofing reduces external noise to acceptable levels. For the propulsion cycle, duration of a single test is limited by capacity of the air dryer to less than an hour on a humid summer day and to about ten hours in the winter. Operation of the facility on the closed-circuit aerodynamic cycle, however, is not time limited.

Complete test information is recorded automatically by electronic devices for immediate processing or for later computing in a unique central data handling system. This center, located in the tunnel offices, handles not only the data produced in the unitary tunnel but that of four other major research facilities on the laboratory grounds.

The new tunnel is the highest powered of three designed and built by the NACA.

Science News Letter, June 2, 1956

• RADIO

Saturday, June 9, 1956, 1:45-2:00 p.m., EDT
"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. Renato Contini, research coordinator, research division of the College of Engineering, New York University, will discuss "Medical Engineering."

GENERAL SCIENCE

Government Publishes Russian Atomic Papers

► THE WORK of Russia's atomic energy experts is now available in English translation from the U. S. Government.

Eighty-seven technical and scientific papers, originally presented at a conference in Moscow, sponsored by the U.S.S.R. Academy of Sciences in June, 1955, have been published by the Government Printing Office.

The papers, printed in four volumes, can be purchased from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

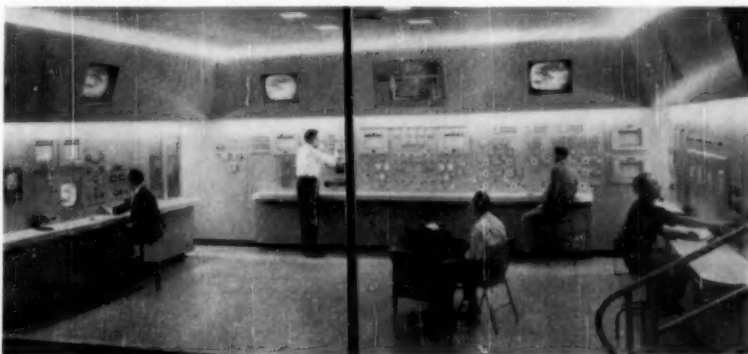
The first volume, priced at \$1.25, consists of 23 papers covering such topics as nuclear properties of heavy elements, theoretical and experimental work on uranium-graphite, reactors and lattices, and radiation effects.

The second volume, selling for \$1.00, has 19 papers on radiochemical studies of high energy fission and spallation, effects of ionizing radiation on chemical reactions, and application of nuclear techniques on chemical structure and reactivity.

Volume 3, priced at \$1.00, has 18 papers describing the application of nuclear technology to industrial processes and prospecting.

The fourth volume, priced at \$1.00, has 21 papers dealing with biological, biochemical effects of ion radiation, and the application of nuclear techniques in biochemistry.

Science News Letter, June 2, 1956



WIND TUNNEL CONTROL ROOM—The control room of the Lewis unitary plan wind tunnel. The tunnel diagram (top, center) provides a pictorial indication of the position of each of the major valves controlling tunnel operation. Each of the 24-inch television monitors (near ceiling) can be connected to any of the three TV cameras that survey the tunnel.

AERONAUTICS

Predict Aviation's Future

► TODAY'S AIR TRAVELER will think he is in another world of airplanes and airports by 1965. He will be flying in strange-looking craft, carried in planes with automatic flight control, be made safe by electronic traffic police and be able to land at one of tens of thousands of airports throughout the nation.

These are but a few of the predictions made by the future planners of the Civil Aeronautics Administration to commemorate the 30th anniversary of the Air Commerce Act of 1926.

Today civil aviation ideas are moving from mind to model just about as fast as the country's fastest jet. The only realistic approach to what is happening, CAA administrator Charles J. Lowen said, "is to let your imagination run wild."

The CAA predictions of things to come by 1965 are not figments of the imagination. Many are already working models or on the drawing board. Just a few of the predictions show that in ten years the skies will be filled with a mixture of present-day planes and strange-looking aircraft.

A limitation of runway space will mean more and more vertical takeoff airplanes and short takeoff and landing airplanes. Passenger planes will probably have tilting

wings and powerplants on a horizontal body and will rise and land like helicopters.

Long-distance flights will be made with the aid of natural jet streams flowing at 200 or more miles per hour more than four miles above the earth's surface.

Traffic control will be built around radar, radar beacons, automatic data links and computers. Radar and the radar beacons will give controllers "eyes." The automatic data link will keep all ground control stations informed about a plane's position, speed and altitude and feed back traffic information to the pilot.

Aircraft in flight ten years from now may be automatically warned by proximity sensing equipment of approaching aircraft or obstacles. Long-range flights may be guided by means of punched tapes aboard the plane for automatic flight control.

By 1965, airports will stop growing and begin to shrink. There will be tens of thousands of "smaller airports" all over the country and a reduction in the time it takes to get from an airport to the middle of town. Airport terminal buildings may very well be a dock for air liners in which passengers enter the building through "flying bridges."

Science News Letter, June 2, 1956

PSYCHIATRY

Mushroom Poison Crazes

► "A PLEASANT MARTINI FEELING" and faces that turn the color of an eggplant if it were diluted are among effects of injections into the blood stream of the poisonous mushroom and toad skin poison, bufotenine.

Hallucinations of seeing vivid red, green and yellow spots that look as if made of fluorescent cloth are other of the mock mental disease symptoms reported by prisoner volunteers given the drug.

The studies, made by Drs. Howard D. Fabing and J. Robert Hawkins of Cincinnati, are reported in *Science* (May 18).

The same chemical when given to dogs causes splaying of the hind legs and "an unearthly howling" which may go on for almost two hours.

Bufotenine is in the narcotic snuff, cohoba, of the Indians of Hispaniola and South America and in the Mouch-more of the Koryaks and other Siberian tribes of the Kamchatka peninsula and the flugsvamp of the Vikings. Drs. Fabing and Hawkins point out.

The berserk rages of the ancient Vikings and the temporary ecstatic states of depersonalization and hallucinations of primitive men who ate certain poisonous plants to produce these effects are now believed due to the bufotenine in the various plants.

The chemical has "surprisingly little" effect on either blood pressure or pulse rate, although one of the volunteers said he felt a tightness in his throat and pulse and a "racing pulse." His pulse rate remained at the basic 84 per minute.

Dilated pupils and nystagmus, with the eyes making involuntary fast movements from side to side or up and down, were other effects of the chemical.

One volunteer reported his mind "felt crowded," another that his mind felt better and more pleasant than usual. The one who reported the "pleasant Martini feeling" said he felt his body was taking charge of his mind.

Studies of this and other chemicals that produce mock mental disease are being pursued with the hope of learning more about possible chemical causes and remedies of mental sickness.

Science News Letter, June 2, 1956

VIRIOLOGY

Find New Virus Group In Babies With Croup

► DISCOVERY of a new group of viruses that may be the cause of croup in babies was announced by Dr. Robert M. Chanock

of Children's Hospital Research Foundation, Cincinnati, at a conference at the New York Academy of Sciences.

Cautiously, Dr. Chanock said his findings "suggest" the new viruses may be the cause of croup, but more studies are needed to confirm this. For the present, he calls the viruses "CA" viruses, meaning croup-associated viruses.

They were found in material swabbed from the throats of two to 12 infants with croup. When grown on monkey kidney tissue in the test tube, they produced an unusual "sponge like" change in the kidney tissue culture.

Science News Letter, June 2, 1956

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PALEONTOLOGY

Ancient Animal Relatives

Fossil remains of animals living 60 million years ago are discovered in Wyoming's Bison Basin. Plesiadapids, small, tree-climbing animals, are included in the collection.

► **FOSSIL REMAINS** of archaic animals that lived 60 million years ago have been discovered in a remote valley in Wyoming known as Bison Basin.

The animals were only remotely related to monkeys, bears and other modern animals, Dr. C. Lewis Gazin of the Smithsonian Institution reported.

The fossils were first discovered by a Geological Survey party. Dr. Gazin had a major part in collecting them.

The creatures lived during the Tiffanian epoch, next to the last subdivision of Paleocene geologic time—a period that lasted approximately 20 million years but which was just the start of the "Age of Mammals," Dr. Gazin reports.

In Paleocene times mammals were emerging as earth's dominant animals and the dinosaurs' importance had waned. Warm-blooded creatures were becoming markedly diversified, filling many of the habitats left by the disappearance of the reptilian forms that previously ruled.

Notable in the collection are remains of plesiadapids. These were small, probably tree-climbing animals, belonging to the primate order, but only remotely related to the living New or Old World monkeys.

Plesiadapids were not only North American in distribution but are known also from the Paleocene in France, from beds about

the same age as our North American Tiffanian time.

The Bison Basin beds in Wyoming produced at least four species and two genera of these creatures, represented by teeth and jaws. Among them is one of the most primitive known of the family, a rather minute creature known as *Pronothodectes*. In the Bison Basin beds this represents a survival of the group recognized as the precursor of true *Plesiadapis*.

Among other creatures represented are condylarths—archaic, subungulate mammals that paleontologists now generally believe gave rise to the modern hoofed or ungulate animals.

The condylarths themselves, however, were not truly hoofed, but had toes with structures intermediate between claws and hoofs. They show evidence that the claws at this stage were beginning to spread out or flatten.

Some of the condylarths were very small; the largest of those in the Bison Basin, however, was *Phenacodus*, an animal over four feet long and about two feet high.

The Bison Basin collection also contains fossil remains of several kinds of creodonts and such creatures as cladenodonts, animals that probably had the appearance of small bears but were not ancestral to them.

Science News Letter, June 2, 1956



YOUNG GREEN HERON—Fledgling green herons are often found this time of year perched in tree branches in nesting areas along streams. They often leave their nests a few days before their wings are strong enough for sustained flight. When disturbed, they scramble along the branches of a tree, squeaking.

ARCHAEOLOGY

Scientists to Seek Ancient Royal City

► **THE GREAT BIBLE CITY** of Gibeon, site of many great battles and incidents, will soon be sought under the soil of what is now el-Jib, an Arab village of 900 inhabitants eight miles north of Jerusalem and three miles from the Jordan-Israeli border.

An expedition left California May 25, directed by Dr. James B. Pritchard, professor at the Church Divinity School of the Pacific, Berkeley, Calif., under the sponsorship of that school, the University Museum, Philadelphia, and the American School of Oriental Research, Jerusalem.

Gibeon is called in the Old Testament a "great city . . . one of the royal cities." It is mentioned 43 times in the Bible and it was there that 12 swordsmen from each of the rival houses of David and Saul slew each other. It was the scene of Joab's slaughter of Amasa and of Solomon's famous dream. It was there that Joshua made the sun stand still.

Archaeologists excavating the ancient Biblical city hope to find evidence of its history and how and in what periods its people lived. In surveying the site last summer, Dr. Pritchard found pottery from various periods 3000 to 2000 B.C., 900 to 600 B.C., and the Roman and Byzantine eras. The largest number of fragments was from the Iron Age of 900 to 600 B.C.

El-Jib is one of the few important Palestinian sites never excavated.

Science News Letter, June 2, 1956

PHYSIOLOGY

Aid to Motherhood

► **A MORE ACCURATE METHOD** of pin-pointing ovulation—a possible boon to many women with sterility problems—is suggested by research reported to the Second World Congress on Fertility and Sterility in Naples, Italy.

Two California physicians reported a sharp rise in the level of platelets, blood elements important in coagulation, right at the time ovulation occurs.

The phenomenon was first observed in a patient with a blood disease called essential thrombocytopenic purpura, in which a reduced platelet count in the blood is followed by intermittent bleeding into the skin, bowels and other organs.

A study of the daily platelet levels over a period of months showed that the lowest count was during menstruation, and the highest at a halfway point between menstrual periods, apparently at the time of ovulation.

This was followed by a study of 26 nor-

mal women between 18 and 36 years, in whom the same phenomenon was observed. The sharp platelet rise occurred at the same time there is a temperature rise about midway between menstrual periods. This temperature rise has been a widely used method of identifying ovulation time, but it may occur over a period of several days. The platelet rise lasts only for a day, and then drops rapidly.

The platelet increase also was correlated with lower abdominal pain that occurs during ovulation in some women. The platelet changes did not occur in pregnant women or in those whose ovaries had been removed.

Two women, one with a sterility problem, have become pregnant after impregnation on a particular day suggested by the platelet peaks.

The work was reported by Dr. Herman Pepper, of Redwood City, Calif., and Dr. Stuart Lindsay, University of California.

Science News Letter, June 2, 1956

METEOROLOGY

Stop Lightning Fires

Cloud seeding will be tried as method of halting forest fires in Southwest this summer. Known as Project Skyfire, the program is cooperative venture.

► **STOPPING LIGHTNING-CAUSED** fires in the great Southwest forests by cloud seeding will be tried this summer, the U. S. Department of Agriculture has announced.

Forest fires cost the United States about \$70,000,000 each year, and more than 6,000 of them in the western states resulted from lightning.

The cooperative program of several Government and two private agencies to learn more about the "occurrence, behavior and control" of forest fires started by lightning will be made in the Coconino National Forest of northern Arizona, where lightning causes hundreds of fires annually.

The cloud seeding program is exploratory, Government experts stress. Its aim is to discover, from motion pictures and radar studies of cloud formation, if the cumulus clouds that are often the source of lightning can be dissipated by cloud seeding.

Mobile radar will be used to detect and analyze the lightning storms. Ground generators to throw silver iodide particles into likely clouds will be set up at one of the twin San Francisco peaks near Flagstaff. This is the first use of radar in forest fire control.

Lightning and cloud systems in the project area will be observed by motion pictures taken from fire towers, and the unseeded storms compared to those getting silver iodide crystals.

The experimental cloud seeding will be limited to cloud systems likely to be suitable for a comparison study.

Silver iodide particles are thought to act as nuclei around which ice crystals in clouds that can bring rain or snow form. It is hoped to learn whether seeding clouds with silver iodide will dissipate, increase or otherwise affect them.

Cooperating in the study are the President's Advisory Committee on Weather Control, the U. S. Weather Bureau, the National Park Service, the Intermountain and Rocky Mountain Forest and Range Experiment station, the Southwestern region of the Forest Service, the Munitalp Foundation of New York and Meteorological Research of Pasadena, Calif.

Dr. Vincent Schaefer, director of research for Munitalp Foundation, is technical leader of the program, named Project Skyfire. An earlier project of the same name was unsuccessful in attempts, started about three years ago, to "make rain" by cloud seeding in the mountains of Montana.

The twin San Francisco peaks in northern Arizona were chosen for the new study because they are relatively isolated. It is hoped analysis of results will be less complicated than when there are many mountains relatively close together, as there are in Montana.

Science News Letter, June 2, 1956

TECHNOLOGY

Non-Slip Bandage

► **A STERILE COTTON GAUZE** roller bandage that is self-fitting, self-tightening and non-slipping—it won't roll away if you drop it—is now available at drug stores.

Because it will stretch 40% and then return to its original shape without losing any of its elasticity, it is particularly useful for easy bandaging of knuckles and other joints. The bandage was first developed by Charles F. Goldthwait and James H. Kettering of the Southern Regional Research Laboratory, U. S. Department of Agriculture, New Orleans.

They developed a process for pre-shrinking cotton gauze. They saw the gauze fibers become kinky and stick to each other as layers of gauze came into contact.

They knew they had a wonderful new bandage, but they also knew that existing Government facilities could not be used to overcome the technical problems of mass-producing the gauze.

In 1952, Government officials approached Johnson & Johnson, surgical dressing manufacturers of New Brunswick, N. J., and asked, in effect, "Can you put this bandage into commercial production?" The firm's scientists accepted the challenge.

Their ingenuity produced a series of new machines that carried the raw cotton through several operations without stopping, culminating in the finished bandage. The chief technical problem was how to carry the wet gauze through the machines without stretching it, for stretching would cause the wet bandage to lose its elasticity. By floating the gauze through, this major hurdle was cleared.

It has taken much research to iron out all the production "bugs," but today gauze for 35,000 KLING Conform Bandages comes off the Johnson & Johnson production line several times daily.

Science News Letter, June 2, 1956

MEDICINE

Elastic Long Underwear For Low Blood Pressure

► **A ZIPPERED**, elastic version of the long underwear grandpa wore has been designed to help victims of a serious form of low blood pressure.

A patient with this disorder is all right while lying down, but faints from the sudden drop in blood pressure when he stands or even merely sits up. The condition, called orthostatic or postural hypotension, is the reverse of hypertension and results from inability of small arteries to constrict and keep enough pressure to force the blood back to the heart.

It may be associated with diabetes mellitus or follow a nerve-cutting operation done to relieve excessively high blood pressure. It may be completely disabling.

The tight-fitting elastic suit puts enough pressure over the lower half of the body to prevent the sudden drop in pressure when the patient sits or stands.

Development of the suit and good results with its use are reported by Drs. Herbert O. Sieker, John F. Burnum, John B. Hickam, and Kenneth E. Penrod of Duke University School of Medicine, Durham, N. C., in the *Journal of the American Medical Association* (May 12).

The suits in the study were designed and made by the David Clark Company, Inc., Worcester, Mass.

Science News Letter, June 2, 1956

BIOLOGY

Hormones Make Sheep Produce More Wool

► **ASPIRIN-SIZE PILLS** implanted under the skin of sheep have increased the animals' wool production by as much as 15% in experiments reported from Christchurch, New Zealand.

D. S. Hart, lecturer at Lincoln College, Canterbury, New Zealand, has stepped up wool growth on a limited number of sheep by administering hormones, derived from thyroid glands, that speed up metabolism.

Sheep at Lincoln College grew up to 15% more wool when given the hormone, l-thyroxine. Sheep in herds on the Canterbury Plains produced 13.5% more wool when given l-thyroxine.

Mr. Hart's research is based on experiments with the effect of light and dark periods on sheep. His results show that sheep produce more wool if given eight hours of light and 16 hours of darkness a day throughout the year. Mr. Hart interpreted this to mean that light and darkness could affect the glandular secretions of sheep.

Parallel experiments with light in the United States did not get these results. Scientists in this country say hormone experiments have not been carried out on enough sheep here to justify any final conclusions.

Science News Letter, June 2, 1956



REMOTE TELEVISION—Soldiers shown here are operating by remote radio control a robot plane equipped with television. The unmanned aircraft sends back aerial pictures of sites up to 40 miles away, using light TV equipment developed at the Army's Signal Corps Engineering Laboratories, Fort Monmouth, N. J. Samuel Humes of New Paris, Pa., (left) operates the plane's ground remote-control box while William Howard of Baltimore Md., works the levers that point and focus the aerial camera.

MEDICINE

Fungus Lung Disease

► **SPOTS ON THE LUNGS** that look like tuberculosis in X-ray pictures may really be due to another disease, histoplasmosis, a lung ailment caused by a fungus.

The importance of distinguishing between the two was stressed in two reports to the National Tuberculosis Association meeting in New York.

One report was from Comdr. George E. Spencer, USNR, and Capt. J. A. C. Gray, USN, of St. Albans, N. Y., the other from Drs. John J. Procknow and Clayton G. Loosli of the University of Chicago School of Medicine, Chicago.

An economic reason was given by the Navy doctors. Histoplasmosis is not spread from person to person, as tuberculosis is, so long-term isolation in a hospital is not needed in cases of the fungus lung sickness. Proper diagnosis consequently can save much money.

Among 1,033 patients admitted from Oct. 1, 1953, to Oct. 1, 1955, to the U. S. Naval Hospital in St. Albans, which is the East Coast center for tuberculosis for the Navy and where some Air Force and Army personnel are also admitted, Comdr. Spencer said 26 were diagnosed as having histoplasmosis. Five also had tuberculosis.

The Chicago doctors said that, although the histoplasmin skin test can be used to determine infection, the complement fixation test is both a diagnostic and prognostic

tool. Complement fixing antibodies develop with histoplasma infection, he said, and thus the test can serve as a gauge of the stage of infection, with high titers found in severe cases.

Trials with a number of drugs in the treatment of histoplasmosis were reported by Dr. W. D. Sutliff of the University of Tennessee, Memphis.

The compounds tried had been used with only partial success, suggesting the need "for more potent therapeutic agents."

Science News Letter, June 2, 1956

PHYSICS

Soviet Atomic Journal Available in Translation

► **WHAT SOVIET SCIENTISTS** and engineers are doing in atomic energy is being told in a new journal of the Academy of Sciences of the USSR. A complete English translation is being issued in New York at \$75 a year.

Some of the subjects being covered sound like publications in U.S. journals: research reactors, accelerators, power reactors, metallurgy and technology of fuel and structural materials, prospecting, extraction and refining of atomic raw materials, isotopes, hot laboratories and radioactive waste.

Science News Letter, June 2, 1956

TECHNOLOGY

Signal Corps Develops Ultrasonic Quartz Cutter

► **ARMY SCIENTISTS** can now cut paper-thin wafers of quartz, a super-hard mineral, with a "sound slicer" that never touches it.

The Signal Corps Engineering Laboratories at Fort Monmouth, N. J., are perfecting an ultrasonic slicing technique that will give three times as many usable quartz wafers or crystals from a block of the strategic mineral as the best diamond saws. The crystals are vital for radar, guided missiles and radio communications.

The experimental slicer, designed by Raytheon Manufacturing Co., Waltham, Mass., simultaneously cuts 21 delicate slabs from a chunk of quartz. Further work is underway to make it meet military standards.

Quartz, like ordinary sand, is silicon dioxide, one of the most common chemicals on earth. However, the high grade natural quartz needed for electronics must be imported, principally from Brazil.

The slicer's bit does not touch the quartz while cutting, although it comes microscopically close. Boron carbide flows between the slicer and the quartz. As the tool vibrates, boron particles rapidly nick out tiny flakes of the quartz.

The diamond saw, used for over 20 years to cut quartz, can slice only 750 units from 12 pounds of crystal. The ultrasonic cutter can slice 2,250. Sound-sliced wafers are 12 mils, or twelve-thousandths of an inch thick, while the thinnest a diamond saw can cut is 33 mils.

Science News Letter, June 2, 1956

ORNITHOLOGY

Birds Use Fat for Fuel on Long Trips

► **BIRDS** use fat the way airplanes use gasoline.

The farther they have to travel, the more fat they put on.

Dr. Eugene P. Odum and Clyde E. Connell of the University of Georgia measured the amounts of fat on the bodies of birds accidentally killed during migration. Birds headed for Central and South America were fatter than those going to southern United States, the West Indies and Mexico.

The scientists learned the ruby-throated hummingbird, one of the smallest birds known, has enough fat when it starts its southward trip to carry it 800 miles. This discovery, reported in *Science* (May 18), supports the theory ruby-throated hummingbirds make a long overwater flight to Central America each fall. Until their departure time approaches, the birds have enough fat to carry them 385 miles, not enough to span the Gulf of Mexico.

Unlike the hearts of obese people, the birds' hearts were completely free of fat. All the other major organs of each bird studied, however, had gained fat.

Science News Letter, June 2, 1956

GEOLOGY

Expedition to Study Formation of Limestone

► SCIENTISTS from the American Museum of Natural History have left for the West Indies to study one of the largest areas in the world in which limestone is still being formed.

The expedition, the second in a three-year project, is headed by Dr. Norman D. Newell, curator of historical geology at the American Museum of Natural History. Nine scientists are investigating the geology, fossils and living organisms in the Great Bahama Bank, a 60,000-square-mile limestone platform under the ocean southeast of Florida.

The investigations may yield valuable information that will help geologists locate valuable minerals, such as oil, in many regions of the earth. Important information may also be uncovered concerning the origin of oil.

The expedition will remain in the Great Bahama Bank area six weeks. Base of operations is the Lerner Marine Laboratory, the American Museum's field station on North Bimini Island, about 60 miles east of Miami.

The area is ideal for the study of the formation of limestone from limy shells, because rocks of the islands contain fossils of many animals now living in the Bank waters. The water, which is unusually clear, has an average depth of about 30 feet.

The study includes aerial and underwater photography, mapping the underwater hills and valleys with a depth recorder, and sampling temperatures, sediments, rocks and water.

Science News Letter, June 2, 1956

CHEMISTRY

Device Detects One Smog-Forming Chemical

► TWO LEADS to help scientists find a way to eliminate smog were reported at a meeting of the American Petroleum Institute's division of refining in Montreal, Canada.

They are a chemical missing link in the formation of smog, and a recently designed smog detector nicknamed "Silent Sam."

The missing link, called compound X, is so scarce it cannot be detected in air with ordinary chemical methods. In discovering the compound, "Silent Sam" proved its ability to identify many chemicals that contaminate air at low concentrations.

"Silent Sam," a spectroscopic device described by scientists as a long-path infrared absorption cell, will be used to attack hitherto unsolvable problems. Scarce air-polluting chemicals, such as the eye-irritant in the Los Angeles atmosphere and the chemical that damages plants exposed to smog, may be identified with the instrument. "Silent Sam" looks like a hot water tank

lying on its side in a jungle of pipes and tubes.

Discovery of compound X bridges a gap scientists encountered each time they approached a solution to the smog problem. Chemists had trouble finding the critical substance with conventional methods, because it has a brief life under smog-formation conditions and because there is so little of it in the atmosphere.

Scientists are not certain of the exact nature of nitrogen-containing compound X, but they think it is formed in a reaction between a free radical and nitric oxide. They do know it is the agent that carries the process of smog formation along, gives smog its durability and permits it to accumulate.

Compound X was isolated in the laboratories of the Franklin Institute of Philadelphia.

The scientists, Drs. E. R. Stephens, W. E. Scott, P. L. Hanst and R. C. Doerr, are cautious about the possibility of eliminating smog by reducing the amount of nitrogen oxides in the air, although this method is suggested by their results.

Science News Letter, June 2, 1956

ARCHAEOLOGY

Earthworm Community "Lost" 2,000 Years

► A "LOST" COLONY of earthworms, which may have thrived since Roman times in a ditch sealed over during the first century A.D., has been found by British scientists near St. Albans, England.

The worms are real bluebloods. They can trace their ancestry back to the dawn of the Christian era. Chances are they have not felt rain fall on their skins in nearly 2,000 years. They have been breeding under successive layers of stone, gravel and concrete since the Romans' sandaled feet pressed into the dust of ancient Britain.

In recent times their underground community has been overlain by a car lot near the Verulamium Museum.

The worms, 18 of them, were found between eight and 15 feet below the surface of the earth.

The ditch in which their ancestors crawled was filled in some time before the year 100 A.D. During the years following, many buildings were constructed over the ditch. Their floors, each of which was built on top of the last, were made of tile, gravel, mortar and beaten earth.

The floors formed a compact layer eight to 15 feet thick that archaeologists say had not been disturbed since Roman times. The ditch, which may have been intended for defense, contained oyster shells, pottery and bits of leather.

The discovery is reported in *Nature* (April 28) by Ronald M. Dobson of the Rothamsted Experimental Station, Harpenden, and J. E. Satchell of the Merlewood Research Station, Grange-over-Sands, England.

Science News Letter, June 2, 1956

IN SCIENCE

GENETICS

Plant Hormone Reverses Dwarfism in Maize

► THE EFFECT of mutations that cause dwarfism in maize has been reversed by treatment with a new plant hormone in experiments at the University of California at Los Angeles.

Dr. B. O. Phinney, U.C.L.A. geneticist, has found that dwarf maize seedlings treated with gibberellic acid respond by normal growth. This plant hormone has only recently been isolated in England from the fungus, *Fusarium moniliforme*.

Six different dwarf mutants of maize were treated in the seedling stage with the hormone. Four of the mutants responded to the treatment by achieving normal growth. Two did not respond to treatment.

For each case, the ability to respond is under the control of a single gene, according to Dr. Phinney. The response of the four mutants and lack of response in the other two indicate that the reason for dwarfism can vary, depending on the particular gene controlling the expression of the dwarfing character. Studies are being made on the mechanism of this response.

Science News Letter, June 2, 1956

MEDICINE

Arthritis Drugs Cut Skin Disease Deaths

► ACTH AND CORTISONE, first famous as remedies for arthritis, have cut deaths from a serious skin disease by more than half, Dr. Samuel M. Bluefarb of Northwestern University Medical School and Dr. Leonard Hoyt of Cook County Hospital reported at a meeting of the Illinois State Medical Society in Chicago.

The disease is pemphigus. It causes blisters that, after absorption, often leave colored spots. Some types of pemphigus are mild, others may end in death.

Before ACTH and cortisone became available, there was no effective treatment, the doctors said. Although these hormone drugs do not cure, they have proved "the most effective and life prolonging" remedies available.

Of 34 patients who entered the hospital in a dying condition in the period 1945 to 1950, 19, or 56%, died in the hospital while under treatment.

In a second similar group of 31 patients in 1951 to 1954, ACTH was used in small amounts. The deaths numbered 10, or 32%. In 1955-56, with an adequate supply of ACTH and cortisone available, there were three deaths in 14 cases, or 20%.

Science News Letter, June 2, 1956

THE FIELDS

ORNITHOLOGY

Birds Change Feathers To Meet Travel Needs

► BIRDS change their feathers during the mating season to meet their travel needs.

Some kinds of birds put on new feathers soon after mating, others molt while their young are hatching. Some lose their head and body feathers at the start, while others shed their wing and tail feathers first.

The reason for this, British scientists have learned, is the varying distances birds fly between their summer and winter homes. Some of them need all their wing feathers for the trip.

For example, the great shearwaters, brown sea birds, fly from south of the equator to the north of the Arctic Circle each year. After they mate on Tristan da Cunha, an island in the South Atlantic Ocean, they keep their wing feathers until they have flown more than 6,000 miles to their Arctic summer quarters.

Another bird, the Fulmar, sheds his feathers while the young are hatching. The Fulmar breeds in his own native region so he does not have to keep his feathers for any long trips.

A. J. Marshall, St. Bartholomew's Medical College, University of London, and D. L. Serventy, Commonwealth Scientific and Industrial Research Organization, Perth, Western Australia, report their findings in *Nature* (May 19).

Science News Letter, June 2, 1956

METEOROLOGY

Iowa Rainfall Sets New U. S. Record

► A NEW United States and possibly a new world's record for the heaviest recorded one-minute rainfall was set in Iowa during the early morning hours of July 10, 1955, a Weather Bureau official in Des Moines has now calculated.

"Over a period of 1.4 minutes, the rate of fall was 0.69 inch per minute," his thorough study, just completed, of a rain gauge chart on the farm of Lawrence Nahnsen, 11 miles north of Jefferson, Greene County, Iowa, showed. For shorter periods, the rate was considerably greater.

Rain falling at this rate for one hour would amount to 41.4 inches, or nearly three and a half feet of water.

The heavy rain burst occurred during thunderstorms that covered several counties of west central Iowa on July 10 last year.

At Opid's Camp, Calif., a storm on April 5, 1926, produced heavy rain evaluated at 0.65 inch per minute. Rainfall of 0.82 inch per minute was reported from

Porto Bello, Panama, on Nov. 29, 1911, but the nature of the record leaves considerable doubt about its reliability.

If the Porto Bello record should be substantiated, the average of 0.69 inch of rain falling on Mr. Nahnsen's Iowa farm last July 10 establishes a new world's record.

C. R. Elford, climatologist at the Weather Bureau Office in Des Moines, examined the rainfall chart and calculated the new record.

A radar set operating at the Des Moines airport, about 55 miles southeast of the point where the heavy rain was recorded, picked up echoes of the storm. A stationary front lay in an east-west line across northern Missouri. There was considerable shower and thunderstorm activity north of the front and numerous reporting stations measured total rainfall of from one to three inches during the 48 hours of July 9 and 10.

The record rainfall was collected in a nine-inch single traverse, unshielded Universal recording gauge belonging to the U. S. Weather Bureau. Mr. Elford reports in *Monthly Weather Review* (Feb.), official journal of the U. S. Weather Bureau.

Science News Letter, June 2, 1956

BIOCHEMISTRY

Chemical Makes Killed TB Germ Vaccine Work

► A WAY to make an effective killed germ vaccine against tuberculosis, long sought by tuberculosis fighters, has been discovered.

The trick is to add to the TB germ a chemical called n-hexadecane. The finding was made by Drs. Anson Hoyt and C. Richard Smith of the Barlow Sanatorium and Robert Knowles and Dr. Frederick J. Moore of the University of Southern California School of Medicine, all located in Los Angeles. Dr. Hoyt reported it at the meeting of the National Tuberculosis Association in New York.

They worked with cultures of BCG, the non-virulent strain of bovine tuberculosis germs used live to make the BCG vaccine now in use. This vaccine, although used in many places for many years, has always been feared by some TB workers because it is a live germ vaccine. They fear that the non-virulent germs might sometime acquire virulence and give the disease the vaccine is intended to prevent.

Adding the chemical to either the live or the killed BCG, Dr. Hoyt reported, "significantly increased the immunity resulting from one injection of either."

An injection of killed BCG with the chemical, he reported, was more effective in producing immunity than an injection of live BCG without the chemical.

The studies show, he said, that "reasonably small single doses of culturally dead tubercle bacilli (TB germs) can effectively immunize mice when combined with n-hexadecane."

Further studies of adjuvant chemicals, he said, seem warranted.

Science News Letter, June 2, 1956

BIOLOGY

Cattle Egret Becoming Established in U. S.

► THE CATTLE EGRET, common in southern Europe, Africa and the Middle East, is establishing itself in the United States. The small white bird stays close to cattle, usually near the head but sometimes near the feet.

Alexander Sprunt Jr. of the National Audubon Society, in a report to the Smithsonian Institution, states there are now about 2,000 cattle egrets in Florida, the state which it first visited in 1942.

How the bird got to the New World is not definitely known, but Mr. Sprunt believes it may have been carried across the Atlantic by wind currents. The cattle egret first appeared in British Guiana in 1937. It was not observed in the United States until five years later. Stray specimens have been found as far north as Maine and Newfoundland, but most of the birds are concentrated in Florida.

Mr. Sprunt says the egret's fondness for cattle may result from the cattle's tendency to kick up grasshoppers and crickets, which the bird eats.

"When an insect is disturbed, the bird darts out, catches it, and returns. Now and then, it reaches up and picks off something from the body of the cow, or its legs. Whether these tidbits are flies, ticks, or what, I do not know, but it is a frequent practice," Mr. Sprunt says.

Science News Letter, June 2, 1956

BIOLOGY

Australians Will Take Census of Marsupials

► THE FIRST MARSUPIAL CENSUS ever taken in Australia will start soon, F. J. Griffiths, chief guardian of fauna for the continent, has announced.

The survey will begin in New South Wales, where there are more than 40 species of marsupials.

"Possums, bandicoots, wombats, koalas, gliders, kangaroos and wallabies will be counted in the census. The animals range in size from a tiny mouse only three inches long to a great gray kangaroo that measures six feet.

"The advent of the white man," Mr. Griffiths said, "was a disaster for the marsupials of Australia. The settlement of the country and the introduction of the fox have been fatal to many of these harmless creatures. Some species have entirely vanished, while others have been so reduced in numbers as to be on the verge of extinction."

Small ground animals such as rat kangaroos, bilbies and little wallabies have suffered most, he said. Larger animals like the kangaroo have survived in greater numbers, while tree-dwellers have found some security living above the ground.

Science News Letter, June 2, 1956

PSYCHOLOGY

Army Tests Cut Accidents

Simple paper and pencil tests, practically proof against cheating, pick drivers that will reduce accident bill. Drivers will be more efficient. Lives will be saved and injuries reduced.

By MARJORIE VAN DE WATER

► BY PICKING BETTER MEN to drive its trucks, jeeps and other motor vehicles, the Army is cutting down on accidents.

Use of a small number of simple tests is expected to result in a reduction of accidents amounting to as much as five to ten percent according to a very conservative estimate.

Since driver accidents are a \$14,000,000 problem in the Army, this will mean a saving to taxpayers of something like \$1,000,000 to say nothing of the saving of lives and prevention of injury to our military men. It also improves the efficiency of drivers.

Surprisingly enough, the tests accomplishing this are not measures of reaction time, reflexes and such psychophysical tests that have been suggested hopefully for driver-permit tests throughout the nation. They are simple, brief, paper and pencil tests that appeal to the men taking them as practical, relevant and interesting.

The new driver tests were developed by psychologists of the Adjutant General's Office of the Army under the direction of Dr. J. E. Uhlner, research manager of the Army Personnel Research Program.

Dr. Uhlner does not suggest use of the tests for screening those applying for driver permits. Although the roads would be a lot safer if only those people best qualified to drive were given permits, it is not practical in a democracy to bar from a permit all those except the individuals who will make the best drivers.

Suggest Trucking Firms Use

It would, however, be highly practical to use the tests or others like them as employment tests to pick drivers for the companies operating big fleets of trucks or taxicabs. These companies could expect a reduction of accidents comparable to that occurring in the Army.

The Army is the largest user of motor vehicles in the world, Dr. Uhlner pointed out.

In many ways the problem of the Army driver is tougher than one in civilian life. Within the continental United States, the Army driver may expect, like his civilian counterpart, to drive for the most part over roads—and pretty good roads they are. Abroad, however, the Army driver may have to find his way through dirt or boggy trails, or may even have to cut off across country where no vehicle has ever been driven before.

One battery of the new Army tests is given to all men on classification. They go through a series of situations that might face any driver on the road and indicate what is the proper thing to do under the circumstances.

For example, the entering soldier might be asked what he would do if the driver ahead of him suddenly stopped. He is given a series of statements any of which might be a good thing to do, but the young soldier is required to pick the one action that is best under the circumstances.

Test Attention to Detail

Next he is given what is a test of perception but more than that. The Army experts call it a test of "attention to detail." The man has to look at lines of type consisting mostly of o's with a few c's sprinkled around at random. It is the soldier's job to spot all the c's. To do it, he must have good vision but he must also be able to keep his attention from wandering and not lose his place, just as the driver on the highway must be alert to spot small details and must be able to keep his eyes on the monotonous road without wandering off.

Third part of the screening battery is what the Army experts call the "Army self-description blank." This very interesting "test" is what the experts call a "non-cognitive" instrument. That means that it does not test the man on what he knows, but rather on what he is.

Hidden among the answers here is the information that employers usually try to obtain in a long employment interview, but actually material never obtained in an interview is elicited.

"Hot-Rod" Answers Indicative

In this "instrument," the soldier tells about his driving experience and instruction, whether he has ever had a job at driving a truck and, more important, about his interests, attitudes and personality, whether he gets bored with his own company and whether he likes to tinker with engines and mechanical things. Tucked in are several questions dealing with experience and interest in "hot-rods."

Some of the "hot-rod" answers were found to point to the good driver and some indicated a "poor risk." It would be very hard for the soldier taking the battery to guess which answer is the "right one." Even the experts did not know when they wrote the questions which answer would turn out to be the best one. They found that out when they saw what the best drivers answered.

The hot-rod questions, like the others in



CRACK-UPS CUT—Sights like this, here displayed to warn other Army drivers, will be less frequent in future now that new tests are picking better, safer drivers.

this part of the self-description, do not have any one "correct" answer. Out of several alternate answers, the soldier is asked to indicate the one best answer for him, but he is given credit if he indicates any one of two or three of the four or five possibilities.

When the opportunity arises to select men for driver training in the Army, selection is made from among those with the highest scores on Battery I, which was given at the reception station. These men are then given Battery II, also a series of paper and pencil tests, together with one test of hand coordination.

In this battery there is another test of judgment on what to do in emergency driving situations depending on situations shown in drawings.

One of the tests in Battery II is a test of vision, but like the "attention to detail" test in Battery I, it also measures more.

In this test of vision plus, the men look at lines of type. At the left of the page is a word, while opposite to it is a group of five words, one of which is the same as the word at the left. Some of the other words look very much like it. Suppose the word at the left is CRATE. The man must find CRATE among the words at the right. If he marks GRATE instead of CRATE, he is wrong. The type gets smaller and smaller down the page.

For the hand coordination measure, the man takes a stylus about the size and weight of a chisel in each hand. He is supposed to follow down a page and tap with his stylus in each of a series of printed circles, some close together and some far apart.

The men who get the highest scores on Battery II after having passed Battery I make the best drivers.

When the men are ready for assignment to their driving job, in the Army licensing procedure they are also given a road test and tests of reaction time, vision, depth perception, color vision and hearing. These tests are used for counseling the men on their strengths and weaknesses.

It is not now possible, Dr. Uhlner feels, for commercial firms to take over the tests in their present form and use them for private drivers. But the principles underlying them can be made use of to develop similar tests.

Science News Letter, June 2, 1956

AGRICULTURE

Russian Farmers Having Troubles

► THE RUSSIAN FARMER is also having a farm problem.

Reports received in the United States show that, due to a late and cold spring, the sowing of crops in the Soviet Union has been delayed for a long time.

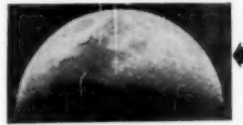
By May 1, the U. S. Department of Agriculture says, the Russians had seeded over 82,500,000 acres. This is 3,400,000 fewer acres than Russian farmers had seeded on May 1 last year.

Science News Letter, June 2, 1956

OPTICAL BARGAINS

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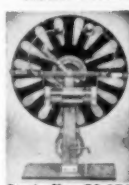
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Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

AN ANTHROPOLOGICAL RECONNAISSANCE IN THE NEAR EAST, 1950—Henry Ford—Peabody Museum, Papers, Vol. XLVIII, No. 2, 119 p., illus., paper, \$2.50. Purpose of the expedition was to fill in some of the known gaps in prehistory and physical anthropology of Syria, Iraq and Iran, and to make a survey of the Persian Gulf area.

BUILDING SCIENCE DIRECTORY—Building Research Institute, loose-leaf, paper, \$2.00 per year. A guide to sources of information on this subject. Additional pages will be issued each year.

CATALOGUE OF SOUTHERN DOUBLE STARS—Richard Alfred Rossiter—Observatory of the University of Michigan, Publications, Volume XI, paper, \$5.00.

EARTH, SKY AND SEA—Auguste Piccard translated by Christina Stead—Oxford University Press, 192 p., illus., \$4.00. By the Swiss scientist who has personally explored the extremes of height and depth in balloon and bathyscaphe.

ELEMENTS OF GENETICS: Mendel's Laws of Heredity with Special Application to Man—Edward C. Colin—McGraw-Hill 3d ed., 498 p., illus., \$5.75. Text and reference work for college students, also intended for the general reader.

GENERAL EDUCATION IN ENGINEERING—A report of the Humanistic-Social Research Project—American Society for Engineering Education, 122 p., paper, 25 cents. The study found that engineering educators throughout the country are in nearly unanimous agreement that their students would profit from a fuller acquaintance with the resources of the humanities and social sciences. (See SNL, May 26, p. 325.)

THE GROWTH AND STRUCTURE OF MOTIVES: Psychological Studies in the Theory of Action—James Olds—Free Press, 277 p., illus., \$5.00. Attacking several problems of organization in behavior from both experimental and theoretical levels.

THE MEN BEHIND THE SPACE ROCKETS—Heinz Gertmann—David McKay, 185 p., illus., \$3.95. Describing pioneering work on space flight as seen by a German.

MENTAL HEALTH PLANNING FOR SOCIAL ACTION—George S. Stevenson—McGraw-Hill, 358

p., \$6.50. A book for all those who work and plan for mental health by the man who was associated for 24 years with the National Committee for Mental Hygiene and is now consultant to the National Association for Mental Health.

PULMONARY CARCINOMA: Pathogenesis, Diagnosis and Treatment—Edgar Mayer and Herbert C. Maier, Eds.—New York University Press (Lippincott), 540 p., illus., \$15.00. Less than 50 years ago an author writing on this subject could cite 312 authentic cases reported up to then. Today that number can be found in a single year in a single city.

RADIO RECEIVER LABORATORY MANUAL—Alex W. Levey—Rider, 105 p., illus., paper, \$2.00. Construction, test and use of a radio receiver offers the first real challenge to a student of electronics.

TRUTH AND FALLACY ABOUT ACID COAL MINE DRAINAGE—S. A. Braley—Mellon Institute, 5 p., paper, free upon request direct to publishers, 4400 Fifth Ave., Pittsburgh 13, Pa. Drainage of acid mine water into surface streams of coal mining areas is one of the most serious problems of stream pollution.

WORLD AIRCRAFT RECOGNITION MANUAL—C. H. Gibbs-Smith and L. E. Bradford—Putnam (John de Graff), 269 p., illus., \$3.50. Identification is aided by photographs, silhouettes, and brief text giving distinguishing features for each of the modern types of plane. An introductory section provides suggestions for recognition training.

Science News Letter, June 2, 1956

ARCHAEOLOGY

Will Collect Fossils in Remote Part of Brazil

► SCIENTISTS from the American Museum of Natural History have left New York for a remote section of Brazil to search for fossils.

No previous study of fossils of the region has ever been attempted. Dr. George Gaylord Simpson, Museum geologist and paleontologist, said, but small scraps of fossils brought out by traders and explorers indicate the area may be rich in fossil deposits.

"Since almost nothing is now known about the evolution of the fauna of the region," he said, "any material we find should be of considerable scientific importance."

The region to be visited is on the upper part of the Jurua River, one of the Amazon's major tributaries. The expedition will be joined at the river by a party of Brazilian scientists from the National Department of Mineral Production and the Goeldi Museum led by Dr. Llewellyn Ivor Price.

The joint party will travel as far as possible up the Jurua by riverboat, but will use dugout canoes to penetrate the remotest sections. They plan to spend about three months in the area.

Science News Letter, June 2, 1956

MEDICINE

New Germs in Lungs Worry TB Fighters

► TUBERCULOSIS fighters are worrying about some new kinds of germs turning up in patients with lung disease. The germs are not the cause of tuberculosis but may cause similar kinds of sickness.

To make the problem worse, they are resistant to anti-TB drugs when first detected.

"Alarming increases" of new infections with some of these germs were reported by Dr. Marie L. Koch of the Veterans Administration Hospital, Wood, Wis., at the meeting of the National Tuberculosis Association in New York.

She reported 125 cases among TB patients and 60 in non-TB patients between October, 1954, and December, 1955. The number of these infections among tuberculosis patients was four times greater in the last three months of 1955 than in the same period of 1954, showing the increase of this infection.

Among non-tuberculosis patients the situation was even worse. The number of cases increased eight-fold.

"The prevailing situation should be of great concern," Dr. Koch said, particularly because knowledge of these new germs and their disease-producing ability in man is incomplete.

The resistance of one of these germs to streptomycin and PAS, although not to isoniazid, tetracycline and oxytetracycline, was reported by Dr. Daniel S. Kushner and Shirley McMillen of Cook County Hospital, Chicago.

Patients with some of these germs may be less infectious to others than typical tuberculosis patients, studies by Dr. Horace E. Crow of Battery State Hospital, Rome, Ga., showed.

Dr. Crow reported cough the predominant symptom in 69 patients, with 65% of them anorically ill.

Science News Letter, June 2, 1956

SURGERY

Graft Fat to Repair Face and Neck Defects

► BODY FAT can be grafted to repair facial defects or fill out "pipe-stem" arms and legs.

Satisfactory takes of fat graft in 80% of his cases were reported by Dr. Lyndon A. Peer of St. Barnabas Hospital, Newark, N. J., at the meeting of the American Association of Plastic Surgeons in Toronto, Canada.

Excess fat, however, is not suitable for grafting. Dr. Peer warned surgeons to slim their patients rather than to fatten them before a fat graft is tried. Fat grafts in lean persons, he said, keep more of their original bulk than similar transplants in the obese.

Fat cells that do not have much fat in them stand the injury of transplantation better.

Science News Letter, June 2, 1956

YOUR HAIR and Its Care

By Oscar L. Levin, M.D.
and Howard T. Behrman, M.D.

If you want healthy hair, lovely hair, then you need the expert advice in this book.

Two medical specialists have here pooled their knowledge to give you in plain language the up-to-date scientific facts now available about hair. They tell you what to do (and what not!) to save and beautify your hair, stimulate healthier hair growth, and deal with many problems, common and uncommon, as:

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Science News Letter, April 21, 1956

MEDICINE

Smoking Affects Breathing

► **WHETHER OR NOT** smoking cuts your wind, as generally alleged, it does not interfere with the mechanics of your breathing if you are a healthy person.

If you have heart or lung disease, however, the reverse is true. Smoking may even damage the breathing process.

Studies showing this were reported by Drs. Ernst O. Attinger and Maurice S. Segal of Tufts University School of Medicine, Boston, and Boston City Hospital at the meeting of the National Tuberculosis Association in New York.

The scientists used special electrical devices to measure airflow rates and pressures in normal persons and patients with heart or lung diseases both before and after smoking one or two cigarettes.

Involved in the mechanics of breathing

are compliance, which is the inverse of elastance or the degree of stiffness of the lung, and mechanical resistance, or resistance to tissue change and movement of air as the volume of air changes with inhalation and expiration.

The amount of work necessary for the breathing process is determined by the mechanics of breathing. The greater the work of breathing, the smaller is the amount of work available for nonrespiratory work, such as physical activities.

No significant change in compliance or in mechanical resistance was found in most of the normal subjects after smoking. In most of the patients, however, there was a "significant increase in both inspiratory and expiratory resistance after smoking and expiratory resistance was strikingly higher

than inspiratory resistance in this group in contrast to the normal group," Dr. Attinger said.

"These preliminary results appear to indicate that smoking does not interfere with the mechanics of breathing in normal subjects. In fact, there appeared to be some improvement in certain aspects of pulmonary ventilation.

"However, in the patients with cardiopulmonary disease, there was usually an impairment of the mechanics of breathing. This effect appeared only transitory as shown by the results in one patient where the values returned to the control level within five minutes," Dr. Attinger said.

Science News Letter, June 2, 1956

Weather is known to have a marked effect on insects and is now being used by scientists in forecasting possible outbreaks of at least two major insect pests of sweet corn, the corn flea beetle and the corn earworm.

MEDICINE

Enzyme Shots Help Asthma Patients

► **SHOTS** of an enzyme chemical, trypsin, have helped a small group of chronic asthma patients, Dr. N. E. Silbert, Lynn, Mass., chief of the department of allergy at the Laurence Quigley Memorial Hospital and Soldiers' Home, Chelsea, Mass., reported to the American College of Chest Physicians.

The chemical helps by making it easier for asthmatics to raise the sticky, thick mucous "gunk" that causes breathing trouble and "social embarrassment."

Changes in the X-ray pictures of the patients' chests suggest that, in addition, some of the signs of lung damage hitherto considered irreversible may actually be reversed by the trypsin treatment.

Trypsin is a digestive enzyme from the pancreas that breaks down protein. It has recently come into use in treatment of various inflammatory conditions such as the bruises developing from injuries. It has also been used as an aerosol that asthma patients inhaled to clear the upper part of their breathing tract.

The trypsin aerosol helped in acute cases, but not in chronic asthma and emphysema.

Dr. Silbert got the idea of giving trypsin to asthmatics by hypodermic injection from the fact that, given this way, the enzyme thinned the heavy secretions in varicose ulcers even though the trypsin did not get into direct contact with the secretions.

The 25 patients given the treatment showed "definite improvement," Dr. Silbert said.

Patients got their shots daily every day for five days to a week, then every second or third day for two weeks and a final shot one week later. A few needed second and third courses of treatment.

Most of the patients had had asthma for seven years or longer.

Science News Letter, June 2, 1956

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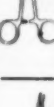


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FORESTRY

Wise Cutting Saves Trees

► **FOREST OWNERS** in wind-battered sections of the United States can reduce tree losses by wise use of ax and saw.

Proper cutting methods vary throughout the country, but most of them involve cutting those trees most likely to be blown down first.

In the Lake states, this means trees that are taller than their neighbors and trees with defects such as rot and insect infestations. In northern New England, it means cutting fir trees before spruces.

The U. S. Forest Service does not recommend cutting all wind-susceptible trees at one time. By cutting some of the trees most likely to be blown down, timber owners can sell them and eliminate damage they may do to other trees.

A single tree blown over can become a gathering place in which insects multiply, then spread to live trees. When large trees are blown down, they can break or uproot smaller ones nearby or land on seedlings.

Science News Letter, June 2, 1956

ENTOMOLOGY

Find Mosquitoes Need Protein

► **MOSQUITOES** need well-balanced diets to reproduce satisfactorily.

If their blood-food does not give the insects enough of the needed proteins, they will not have as many offspring as they could, Dr. Dwight M. DeLong, Arden O. Lea and John B. Dimond of Ohio State University have concluded.

The scientists gave yellow fever and malaria mosquitoes a variety of diets to see why those that feed on some animals lay more eggs than those that feed on others.

Numerous substances in sugar solution on saturated pads were fed to 200 fertile female *Aedes* mosquitoes for 16 days. Of the foods tested, only certain proteins or their derivatives stimulated egg production, the scientists report in *Science* (May 18).

They are now studying the role of vitamins in mosquito reproduction.

Science News Letter, June 2, 1956

TABLETS?

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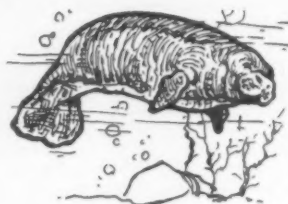
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MARINE BIOLOGY

NATURE RAMBLINGS

by Horace Loftin



Mermaids

► **LIKE MANY**, or most, of the ancient legends, stories of mermaids—half human, half fish—are based on fact. But as is often the case, the real "mermaid" is not the lovely, beguiling creature of the myth.

Instead of being petite and curvaceous, the mermaid of actuality is tub-like and weighs from 600 to perhaps 2,000 pounds. Legend gives the mermaid long, golden tresses, but a real one is completely bald-headed.

At a great distance across the water, she might remind a lonesome sailor of a beautiful woman in the sea, giving rise to the legend. At close quarters, the "mermaid" turns out to be only the great, lumbering sea cow.

You might think that close examination of the sea cow would dispel all thoughts

of enchantresses in the sea. But not so. Even the matter-of-fact scientist who classified the creatures called them "Sirenia," named for the beautiful sirens who led sailors to their death.

There are two general types of sea cows: the manates of the Atlantic, such as are occasionally seen in southern Florida waters; and the dugongs of the Pacific and Indian Oceans and the Red Sea.

The American manatee—a disappearing race—are about nine to 15 feet long. Being true mammals, they suckle their young. To nurse, the mother sits up with her head and shoulders above water, holding the baby to her breast between her flippers. At birth, which takes place in the water, a young sea cow is about 30 inches long and can swim immediately.

Like the whales, the sea cows represent land-dwelling mammals that returned to the sea countless thousands of years ago. However, the sea cows are no more closely related to the whales than they are to most other groups of mammals, in spite of their similar habits.

The American manatee evidently once ranged as far north as North Carolina or Virginia. Today it seems to be restricted in the United States to a small stretch of water near the tip of Florida. It is still abundant in the wilder parts of Central and South America.

The largest of the race, Steller's sea cow, was extinct shortly after being discovered in the Bering Sea. The once-numerous species was the victim of sealers and whalers who killed them for their blubber.

Our American manatee is protected by law from hunters. Even so, thoughtless gunners still kill this inoffensive beast.

Science News Letter, June 2, 1956

MEDICINE

RI Vaccine Succeeds

► **THE ARMY** now has a successful vaccine against the virus pneumonias, grippé and other cold-like diseases that attack recruits in training.

The diseases are called ARD, short for acute respiratory diseases. They are caused by a virus, and are severe enough to send a man to the hospital. They are not the same as the common cold.

The number of such cases was cut by more than 80% in trials at Fort Dix, N. J., the Army announced.

The new vaccine gives protection quickly, reaching maximum effectiveness within one week. Army medical officers are particularly enthusiastic about this because it means they can stop epidemics before they start sweeping through training camps.

The viruses against which the new vaccine protects cause more than half of all hospitalized cases of respiratory disease in military recruit camps. At Fort Dix about 20% of all the men who train there during the winter are put into the hospital because of this illness.

The new vaccine was developed and pre-

pared by the Army's department of respiratory diseases, headed by Dr. Maurice R. Hilleman, Walter Reed Army Institute of Research, Washington. It was evaluated in soldiers at Fort Dix by a field team headed by Maj. Reuel A. Stallones and Dr. Ross L. Gauld of the Institute.

It is made from tissue cultures of monkey kidney that had been infected with the two predominant RI viruses. These are also called ARD and APC viruses. The virus in the vaccine was killed with formaldehyde. The vaccine caused no untoward effects in the more than 350 persons who got it.

ARD has always been a major medical problem to the Armed Forces. At Fort Dix alone some 6,000 cases occurred between May, 1954, and June, 1955. The cost of hospitalization and time lost is conservatively put at more than two million dollars at this one training base.

Although the new vaccine is still considered to be on a testing basis, more and more recruits will receive a protective shot.

Science News Letter, June 2, 1956

GENERAL SCIENCE

Soviet Science Information

► RUSSIA is making a determined bid to become the world's best scientifically informed nation.

Using the same mass attack techniques employed on the battlefield, Russian scientists are mass producing their own and just about everyone's scientific papers in Russian.

Headquarters for the dissemination of scientific information for Russian scientists is the special Institute of Information of the U.S.S.R. Academy of Sciences, established in 1953.

The chief object of the Institute, the Soviets claim, is to keep Soviet scientific workers abreast of the main branches of learning in all countries of the world.

Keystone of Russia's "operation scientific information" is a series of publications entitled "Abstracts." This one series alone carries reviews of all work done in the Soviet Union, plus abstracts from 9,000 foreign scientific and technical journals from 80 countries.

In addition to abstracts of work in progress, new book reviews, patents and dissertations are also carried in "Abstracts."

"Abstracts" is broken down into various

fields of scientific study, such as physics, chemistry, biology, mathematics, mechanics, etc. The series "Chemistry and Biology," for example, is a semimonthly publication issued in two sections.

To get an idea of the contents of these publications, in 1955, "Abstracts" contained 75,000 reviews pertaining solely to chemistry and biological chemistry. The series on biology contained 70,000 reviews.

At present, the Institute of Information is preparing indices for all the "Abstracts" so there will be a central file to almost all the scientific work being conducted throughout the world.

The Institute also functions as a specialists' clearing house. Scientists in Russia can request photographic copies and microfilms of some researches, or can request a special translation of any given foreign paper.

Russia's assault on scientific information is reported by A. Sinechikov in *Voks* (Feb.), the Moscow publication of the U.S.S.R. Society for Cultural Relations with Foreign Countries.

Science News Letter, June 2, 1956

BIOPHYSICS

Yttrium Fights Cancer

► RADIOACTIVE YTTRIUM poured into the wound after a cancer has been cut out makes a "radioactive curtain" to destroy any bits of cancer that escaped the surgeon.

This method of fighting cancer has been worked out on mice by Dr. Horace Goldie of Meharry Medical College, Nashville, Tenn.

The flood of radioactive material poured into the wound also seeps into lymphatic channels used by escaping cancer cells and overtakes and destroys some of the cancer cells, Dr. Goldie finds.

If the cells have spread to distant parts of the body, however, the radioactive chemicals cannot overtake them.

Dr. Goldie and associates have been able to destroy tumors completely by inserting the radioactive curtain between tumors and neighboring healthy tissues. The radioactivity cut off supply routes to the tumors and starved them.

Cutting out the tumor surgically, however, was simpler and quicker. The most effective method of treating the mouse tumors, the scientists found, was to remove the tumor surgically and use radioactivity prophylactically.

Radioactive phosphorus and gold can be used. Radioactive yttrium, however, has the advantage of staying in the tissues until the radioactivity, effective for about ten days, is spent. A large part of the yttrium put around the tumors, moreover, gets inside the tumors and destroys them.

Although Dr. Goldie's studies were with mice, the results strongly suggest that radioactive substances used prophylactically in humans might prevent some recurrences of cancer following surgery.

Dr. Goldie's findings were announced by the American Cancer Society, which supports his work. He is now seeking radioactive materials that will track down and destroy cancer cells anywhere in the body.

Science News Letter, June 2, 1956

Questions

AGRICULTURE—Why are Russian farmers having a farm problem? p. 347.

☐ ☐ ☐

MEDICINE—How does smoking affect the breathing of those with heart and lung diseases? p. 349.

☐ ☐ ☐

METEOROLOGY—What is the U. S. record for rainfall in one minute? p. 345.

☐ ☐ ☐

ORNITHOLOGY—How do birds stock up energy for long trips? p. 343.

☐ ☐ ☐

PHYSIOLOGY—How can counting blood platelets be an aid to motherhood? p. 341.

☐ ☐ ☐

VIROLOGY—What may be cause of croup in babies? p. 340.

☐ ☐ ☐

PHOTOGRAPHS: Cover and p. 339, National Advisory Committee for Aeronautics; p. 341, George A. Smith; pp. 343 and 346, U. S. Army; p. 352, E. J. Lush, Inc.

BIOCHEMISTRY

Chemicals Less Random As Evolution Progresses

► A CHEMICAL TIE with evolution was reported by Drs. K. Laki and D. R. Kominz of the National Institutes of Health at a symposium on research methods and instrumentation held at the institutes in Bethesda, Md.

The tie relates to the distribution of protein-building amino acids in a special muscle protein, tropomyosin. The uneven distribution of the amino acids in this protein gets less random the higher in the evolutionary scale the animal is.

The scientists examined amino acid distribution in tropomyosins from human uterus, calf heart, rabbit skeletal muscle and uterus muscles, carp muscle, lobster, and earthworm and flatworm.

Science News Letter, June 2, 1956

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Science News Letter, June 2, 1956

⚙️ **REPELLENT TISSUES** apply insect repellents in the same way as using a cleansing tissue. The repellent-impregnated tissues, designed to be carried in the pocket, eliminate breakage, spillage of liquid repellents and the possibility of children drinking the chemical. Tests have shown there is no skin irritation.

Science News Letter, June 2, 1956

⚙️ **MEAT GRINDER** for home use is all electric. The grinder will grind hard or soft cheese, vegetables or left-overs. The home appliance will operate as fast as it is fed. An ice crusher unit that produces nine different sizes of ice can be attached to the grinder.

Science News Letter, June 2, 1956

⚙️ **GLASS-BOTTOM BOAT**, shown in the photograph, is a canoe, cradle and life-preserver all in one. The four-foot, sea-going craft weighs 10 pounds and measures



48 inches long, 10 inches deep and 32 inches wide. Molded in one piece, the leakproof boat is built to stay afloat even when full of water. It can carry 250 pounds.

Science News Letter, June 2, 1956

⚙️ **CARPENTRY KIT** offers youngsters a basic education in framing and a lot of

fun learning. The kit consists of 575 pieces of wood cut to exact length for putting together a miniature pre-fabricated home. The completed model is a two-bedroom ranch type home which can be used as a toy.

Science News Letter, June 2, 1956

⚙️ **CUTTING BLOCKS** imported from Germany are designed for easy slicing in the kitchen. The hardwood blocks can take a 20-pound ham for carving. The blocks, in small and large sizes, have a magnet for holding the knife within easy reach when not being used.

Science News Letter, June 2, 1956

⚙️ **REFILL BALL POINT PEN** is described as the first of its kind with a built-in spare ink supply. The pen has two separate silvered tip points and two ink supplies in a single unit. When one is damaged or empty, the other is reversed into writing position.

Science News Letter, June 2, 1956

⚙️ **PATCHING MATERIAL**, especially effective for summer fabric furniture, is a solvent-activated product. The patch itself is a five-by-eight-inch swatch of fabric saturated with plastic vinyl resins. When dipped in a solvent, it adheres to canvas, leather, wood or metal.

Science News Letter, June 2, 1956

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Do You Know?

Oyster shell is a rich natural source of calcium.

The U. S. Government harvests more than \$2,000,000 worth of pelts annually from the seal herds of the Pribilof Islands.

The sea lamprey sets up an electrical field around its head and this, when amplified, has been used to light a flash bulb and trigger the shutter of a camera, thus taking its photograph.

Sensitive instruments are being used to chart temperatures and other conditions in model rooms to help engineers find the best "indoor climate" for learning.

Builders of atomic reactors make wide use of artificial graphite, a by-product of the petroleum and coal industries.

Falling rock and coal killed 79 of the 111 miners who died in underground coal-mine accidents during the first three months of 1956.